



NEW ZEALAND



EDICT OF GOVERNMENT



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AS-NZS 2172 (2003) (English): Cots for household use
- Safety requirements [By Authority of New Zealand
Product Safety Standards (Household Cots)
Regulations 2005 (SR 2005/212)]

*We will sell to no man,
we will not deny or defer to any man either justice or right.*

Magna Carta—Tūtohunga Nui

*Kore rawa e hoko ki te tangata, e kore e whakakāhoretia,
e tautuku rānei te tangata ki te ture, tika ranei.*



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Cots for household use—Safety requirements

AS/NZS 2172:2003

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CS-003, Safety Requirements for Children's Furniture. It was approved on behalf of the Council of Standards Australia on 19 September 2003 and on behalf of the Council of Standards New Zealand on 30 September 2003. This Standard was published on 17 November 2003.

The following are represented on Committee CS-003:

Australian Chamber of Commerce and Industry
Australian Competition and Consumer Commission
Australian Consumers' Association
Australian Industry Group
Australian Retailers Association
Barnardos New Zealand
Commercial Furniture Industry Association of Australia
Competition and Consumer Policy Division, Department of The Treasury
Consumer Affairs Victoria
Consumers' Federation of Australia
Department of Consumer and Employment Protection (WA)
Department of Human Services (South Australia)
Department of Tourism, Racing and Fair Trading, (Qld)
Furnishers Society of Victoria
Furniture Association of New Zealand
Furntech
Infant Nursery Products Association of Australia
Ministry of Consumer Affairs (New Zealand)
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Australian/New Zealand Standard™

Cots for household use—Safety requirements

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CS-003, Safety Requirements for Children's Furniture to supersede AS/NZS 2172:1995.

This Standard incorporates Amendment No. 1 (January 2006) and Amendment No. 2 (November 2008). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The first edition of this Standard, AS 2172—1978, was prepared at the request of the former Consumer Standards Advisory Committee. The document underwent several revisions to widen its scope, incorporate additional requirements and clarify existing ones. The first edition of NZS 5810 in 1979 was an endorsement of BS 1753:1977 with minor amendment, followed in 1992 by the second edition, an endorsement of AS 2172—1991, again with minor amendment.

This edition includes requirements which are adopted from the International and European Standards.

The objective of this Standard is to provide regulatory authorities with essential safety requirements and to provide manufacturers with functional, durability, stability and performance criteria to meet these safety requirements, in order to reduce the likelihood of deaths or injuries to children.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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FOREWORD

Committee CS-003 has placed greater emphasis in this edition of the Standard on mattress size and in particular mattress thickness. The decision to allow adjustable base cots in the Standard has made this dimension all the more important.

It is important to maintain a minimum distance between the top of the mattress and the top of the lowest side or end of the cot to minimize the risk of a child climbing or falling out of the cot. It is also important to design an adjustable base cot so the top of the drop side remains at least 250 mm above the mattress base when the base is in the upper position.

The minimum vertical distances specified between the top of the mattress base, i.e. with no mattress, and the top edge of the lowest cot side or end, are based on the use of a mattress 100 mm thick. A mattress thicker than 100 mm will require a corresponding increase in this vertical distance to compensate.

Extra marking and labelling requirements for adjustable base cots are intended to reinforce the message to parents or carers that the mattress base should be adjusted to the lower position before the child can sit up, and also to warn about appropriate mattress thickness. The marking and labelling should be as clear and conspicuous as possible, to achieve its purpose.

The industry has researched mattress sizes and determined that the most common size is 1300 × 690 mm.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard Cots for household use—Safety requirements

1 SCOPE

This Standard specifies safety requirements for cots. These include material, design, construction, performance, labelling and marking requirements, all of which are important for the well-being of children who use cots. The Standard is applicable to cots for use in household situations. It is not applicable to folding cots. Folding cots are covered in AS/NZS 2195, however folding timber cots are required by AS/NZS 2195 to meet some parts of this Standard.

NOTE: Requirements for cots in day nurseries, hospitals and institutions are given in AS/NZS 2130.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

2281 Flexible cellular polyurethane for seat cushioning and bedding

AS/NZS

2130 Cots for day nursery, hospital and institutional use—Safety requirements

2195 Folding cots—Safety requirements

4491 Timber—Glossary of terms in timber-related Standards

AS/NZS ISO

8124 Safety of toys

8124.1 Part 1: Safety aspects related to mechanical and physical properties
(ISO 8124-1:2000, MOD)

8124.2 Part 2: Flammability (ISO 8124-2:1994, MOD)

8124.3 Part 3: Migration of certain elements

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

NOTE: All definitions apply to fully-assembled cots.

3.1 Access

Opening obtained by operating a part or parts of a cot to allow easier entry to the inside of the cot (see Figure 1).

3.2 Access fastening device

A means by which the component of the cot creating the access is held closed.

3.3 Child

A baby or toddler within a cot (unless otherwise stated in this Standard).

3.4 Cot

Product with raised sides and ends designed as an enclosed sleeping facility for infants and babies.

3.5 Dropside

A component of a cot, so constructed and incorporated into the cot that it can slide up and down in order to close off or provide access.

NOTE: See Clause 3.1 for a definition of 'access'.

3.6 Dropside mechanism

A system of guide-rods, slides or other devices including stops and latches which allows the dropside to slide up and down and be held securely in its fully closed or fully open position.

3.7 Filler bars or filler panels

The bars or panels in the end or side frames of the cot (see Figure 1).

3.8 Gap

An opening bounded by solid components of the cot.

3.9 Mattress base

The surface on which the cot mattress is supported.

3.10 Within the cot

The whole interior of the cot including the mattress base, outside and above the cot extending outwards to a distance of 300 mm in any direction.

NOTE: The reason for this term is that when a child is 'within the cot', components that cannot be reached do not need to be tested e.g. castors.

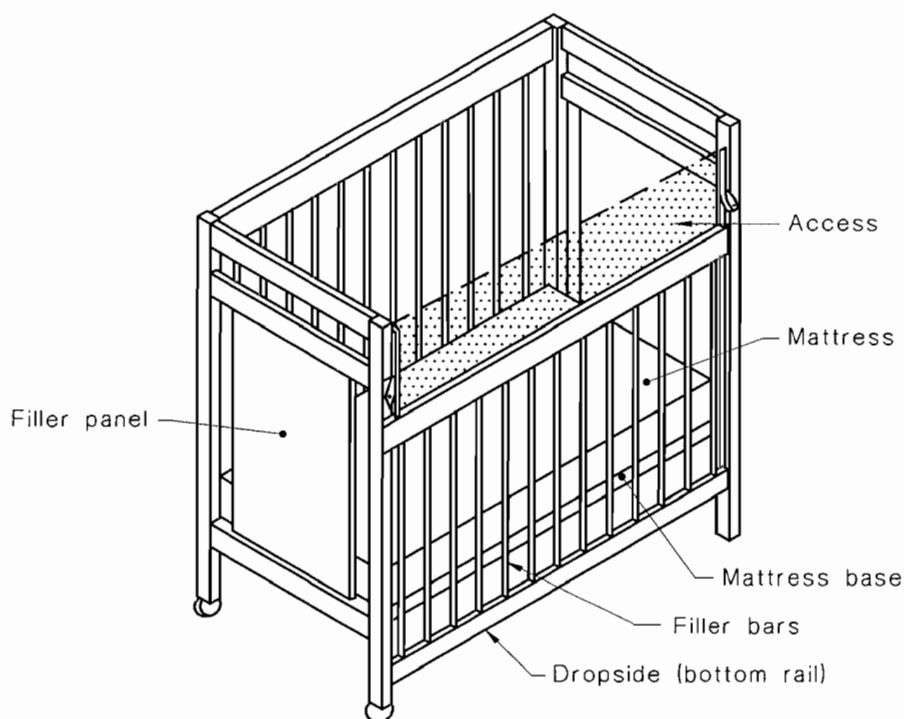


FIGURE 1 TYPICAL COT

4 MATERIALS

4.1 Timber

Timber used in cots shall—

- (a) not contain splinters, loose knots, compression failures, pith or reaction wood as defined in AS/NZS 4491;
- (b) be free from decay and insect attack; and
- (c) be free from the intentional addition of hazardous chemicals such as copper chrome arsenate.

NOTES:

- 1 It is recommended that the moisture content not exceed 13%.
- 2 The intention of Item (c) is that timber is not treated with preservative chemicals.

4.2 Metals

All metal components, including springs, nut, bolts and washers, shall be either made of corrosion-resistant material or be protected from corrosion.

4.3 Toxicological requirements

All exposed surfaces of the cot shall comply with the toxicological requirements specified in AS/NZS ISO 8124.3.

5 CONSTRUCTION

5.1 General

All components of the cot shall be permanently fixed or require the use of a tool to enable partial or total disassembly, so that the requirements of Clause 9 of this Standard are complied with, and utilize a system of assembly/disassembly which precludes possible tampering by a child within a cot.

All joints shall be close fitting in accordance with Clause 9.2 of this Standard.

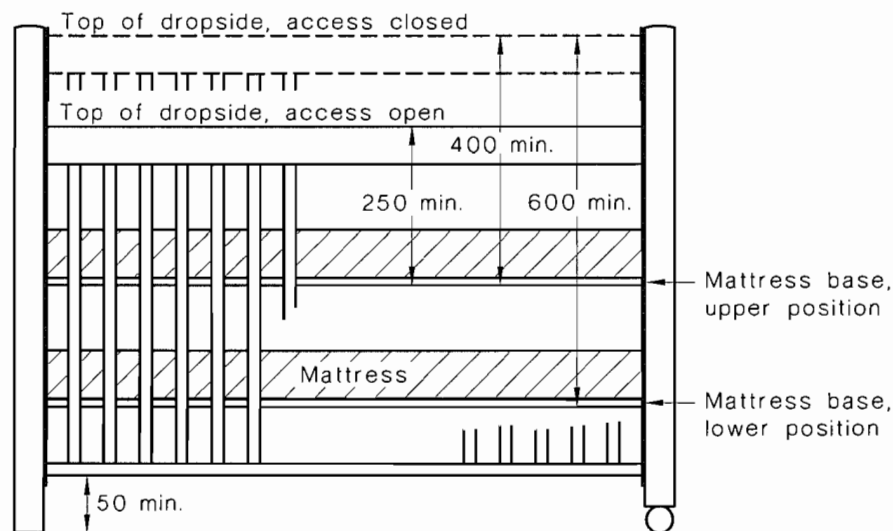


FIGURE 2 DIMENSIONS FOR ADJUSTABLE BASES

6 DESIGN

6.1 Dimensions

In addition to the requirements in Clause 9.2, the following dimensions shall apply (except if otherwise permitted in this Standard, also see Figure 2):

- (a) *Depth of cot—Fixed base cots* For fixed base cots, the vertical distance between the top of the mattress base and the top edge of the lowest cot side or end—
 - when the access is closed shall not be less than 600 mm (min)*
 - and when the access is open shall not be less than 250 mm (min)*.
- (b) *Depth of cot—Adjustable base cots* Only two designated positions of the mattress base shall be permitted as follows:
 - (i) *Lower position* For adjustable base cots when the mattress base is in the lower position, the vertical distance between the top of the mattress base and the top edge of the lowest cot side or end—
 - when the access is closed, shall not be less than 600 mm (min)*
 - and when the access is open shall not be less than 250 mm (min)*.
 - (ii) *Upper position* For adjustable base cots when the mattress base is in the upper position, the vertical distance between the top of the mattress base and the top edge of the lowest cot side or end—
 - when the access is closed shall not be less than 400 mm (min)*
 - and when the access is open shall not be less than 250 mm (min)*.

Where inverting the mattress base changes the height of the mattress base, all resulting heights shall comply with the relevant minimum depth requirement.

- (c) The distance between adjacent filler bars or filler bars and filler panels shall be not less than 50 mm (min).

NOTES:

- 1 To facilitate supervision, it is important that the filler bars and filler panels are arranged so that a child within the cot can be readily seen. Airflow is also an important factor.
- 2 Guide rods are not considered as filler bars for this purpose.

- (d) Distance between the mattress (complying with the recommended size specified on the information leaflet, see Clause 11.1(c)), and any part of the cot sides or ends at its centred position measured horizontally shall be not more than 20 mm (max).

NOTES:

- 1 Push the mattress to one side or end of the cot. The gap between the other side of the mattress and the opposite cot side should be no greater than 40 mm. Repeat procedure for the sides and ends. If mattress cannot be pushed to one side, measure both sides.
- 2 The intention of this Clause is to minimize the danger of a child smothering if its face becomes trapped between the mattress and the cot sides or ends.
- 3 Manufacturers should submit their cot for testing with the mattress they recommend in Clause 11.1(c).
- 4 The width of the mattress should not be such as to interfere with the free movement of a dropside if fitted. If this free movement is inhibited it may be possible to raise the dropside and have it 'sit' but not be latched so that it may later be opened by the child in the cot.

* The distances specified in Clause 6.1(a) and (b) are based on the cot having a mattress 100 mm thick. A recommended mattress deeper/thicker than 100 mm would require a corresponding increase in the vertical distance measured.

- (e) Distance between the bottom rail of the dropside and the mattress base measured horizontally with the mattress base in the lower position and the dropside in the closed position shall be—

not less than 12 mm (min.)

and not more than 30 mm (max.)

NOTE: This should be tested in the static position.

- (f) Distance between the floor and the bottom rail of the dropside at its lowest point of travel shall not be less than 50 mm (min.)

NOTE: The intention of this requirement is to prevent injury to the carer's feet.

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- (g) With the dropside in the closed position and the mattress base in lower position, when tested with a force of 50 N it shall not be possible for a 30 mm probe to pass through the aperture between the mattress base and the sides and between the mattress base and the ends.

NOTE: The purpose of this Clause is to avoid gaps greater than 30 mm which may allow limb entrapment.

6.2 Footholds

There shall be no structural members or components between 150 and 550 mm above the mattress base that could be used as footholds or toeholds for climbing.

NOTES:

- 1 The intention of this Clause is to ensure that the minimum depth of cot is maintained and therefore prevent the child from falling out of the cot.
- 2 Any surface greater than 5 mm deep and 15 mm wide inclined at less than 75 degrees to the horizontal should be regarded as a foothold.

6.3 Design of access fastening device (see also Clause 9.6)

Any access fastening device shall engage automatically when the dropside is raised and shall consist of—

- (a) two fastening devices separated by a distance of at least 850 mm that have to be operated simultaneously; or
- (b) a system that requires at least two separate but simultaneous actions operating on different principles; or
- (c) a system that requires at least two consecutive actions operating on different principles the operation of the second being dependent on the first having been carried out and sustained; or
- (d) locking mechanisms so constructed that the residual force for operating them is at least 50 N when measured after the test in Appendix E; or
- (e) by so positioning the device that it is inaccessible to the child within the cot.

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For a mechanism designed for a lift and push dropside release, either action (lift or push) shall comply with Item (d).

NOTE: The purpose of this Clause is so that the access fastening device is designed so that the child cannot open the device.

6.4 Dropside guides

The guides of a dropside mechanism shall comply with the following:

- (a) The guides shall be designed and fastened to enable the dropside to move freely up and down.

- (b) Each guide shall be fastened firmly to the cot frame at both ends and, where practicable, at an intermediate level near to the mattress base.

NOTE: To prevent its withdrawal, a guide rod which passes through a bracket is to be fitted with a lock nut or some other retaining device for it to be considered to be firmly fastened to the bracket.

6.5 Bottom rails

The bottom surface of the bottom rail on the sides and the ends of the cot shall not be higher than the upper surface of the mattress base.

6.6 Castors or glides

Where castors or glides are provided, one of the following shall apply:

- (a) Two castors.
- (b) Two glides.
- (c) Two castors, both having brakes, and two glides.
- (d) Four castors, of which at least two have brakes.

6.7 Protrusions and snag points

Protrusions shall not be more than 5 mm unless they are so designed that they cannot snag onto clothing. (See Figure 3 which shows typical protrusions labelled 'x').

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NOTE: The intention of Clause 6.7 is to ensure that protrusions and snag points on a cot do not present a means by which the child's clothing could catch and thereby present a possible strangulation hazard.

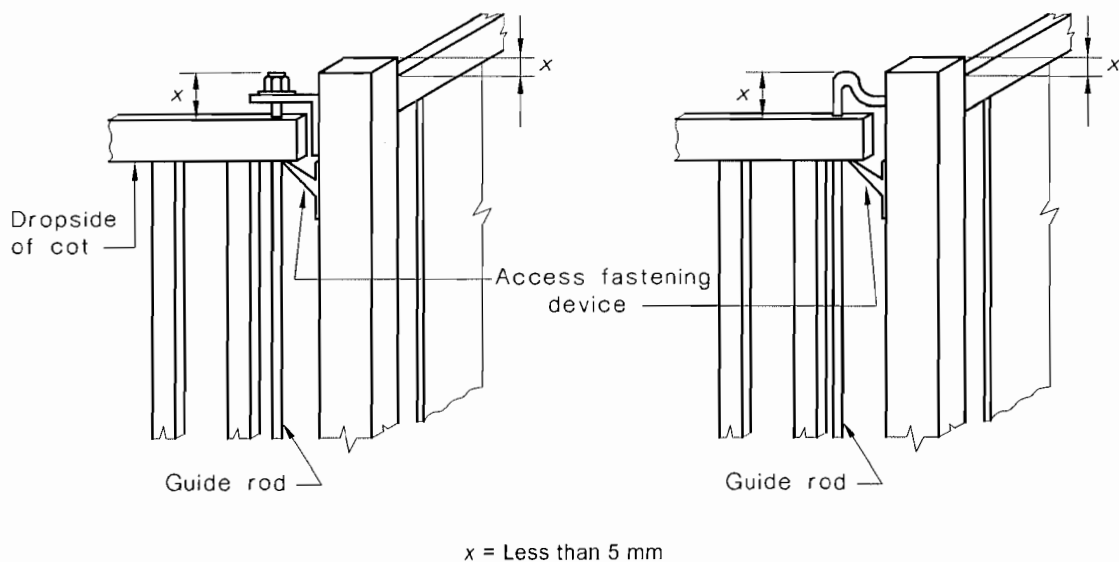


FIGURE 3 TYPICAL PROTRUSIONS

6.8 Sharp edges and sharp points

Unless covered by padding or inaccessible when assembled, edges, protrusions or sharp points shall comply with the following:

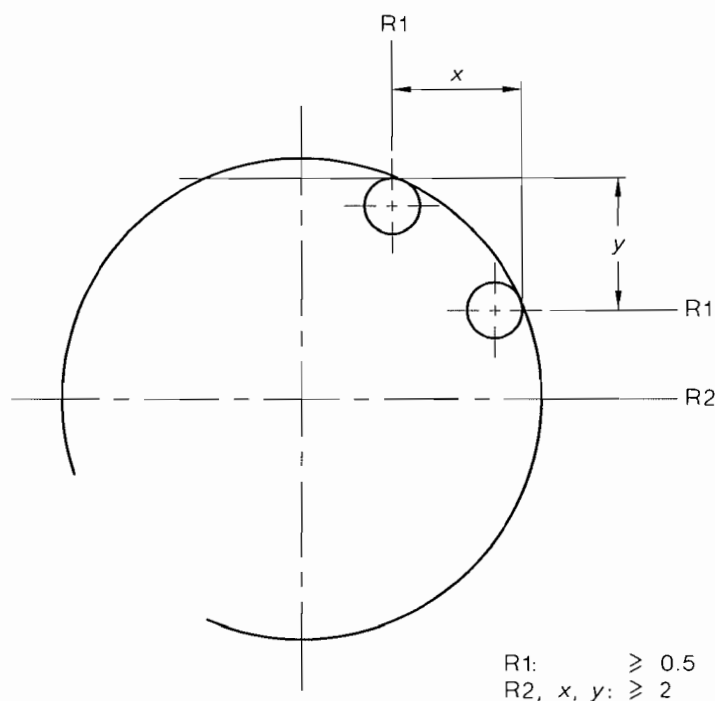
- (a) There shall be no protrusions within the cot over 100 mm above the mattress base that are accessible to the 95 mm diameter headform specified in Appendix A unless they have a radius of at least 2 mm and not exceeding 5 mm in height.

- (b) Edges within the cot and along the top of the cot, that are accessible to the 95 mm diameter head form specified in Appendix A, shall have a radius of at least 2 mm or chamfered in accordance with Figure 4.

The headform access check in Clause 6.8(b) shall include: with and without the mattress; with the mattress base in both positions and with the access in the open and closed positions.

- (c) Small components over 100 mm above the mattress base, such as hinges, brackets and catches, shall be free of burrs, sharp points and sharp edges. Potential sharp points and sharp edges shall be tested in accordance with AS/NZS ISO 8124.1.
- (d) There shall be no open-ended tubes.
- (e) For wooden parts, edges excluded by Item (b) above shall be chamfered.

NOTE: The intention of this Clause is to ensure that the inside of a cot is free from protrusions which could injure a child (especially its head) if the child fell or rolled onto the protrusion.



DIMENSIONS IN MILLIMETRES

FIGURE 4 EXAMPLES OF REQUIRED RADII OF EDGES AND CORNERS

7 TOYS INCLUDED WITH COT

Where a cot incorporates a toy, that toy shall comply with AS/NZS ISO 8124.1; AS/NZS ISO 8124.2 and AS/NZS ISO 8124.3.

8 TRANSFERS

Decorative transfers shall not be applied within the cot.

NOTE: This requirement is intended to minimize the risk of a child peeling off parts of the transfer which could be inhaled, swallowed or placed over the mouth and nose.

9 SAFETY AND PERFORMANCE REQUIREMENTS

9.1 General

The tests specified in this Clause shall be performed on the same cot and in the following sequence: Clauses 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8 and 9.2.

9.2 Entrapment hazard test

When tested in accordance with Appendix A, all holes and gaps within the cot shall be—

- sufficiently large to allow a sphere of 50 mm diameter to pass through but not allow a sphere of 95 mm diameter to pass through; or
- sufficiently large to allow a cylindrical probe of 12 mm diameter to enter but not allow a sphere of 30 mm diameter to pass through; or
- sufficiently small as to not allow a cylindrical probe of 5 mm diameter to enter to a distance of at least 10 mm unless it allows lateral movement of the probe by at least 20 mm in any direction.

This test should be carried out with the dropside in the open and closed positions and the base in both positions.

NOTES:

- The intention of these requirements being applied to above and including the mattress base of the cot is to ensure that a child cannot stretch out and reach any hazardous gaps that are 'accessible' or at arms length.
- Clause 9.1 requires that this test be repeated at the end of the test sequence to ensure that the cot still meets the requirements of this clause after undergoing the tests under Clauses 9.3, 9.4, 9.5, 9.6, 9.7, 9.8 and 9.9.

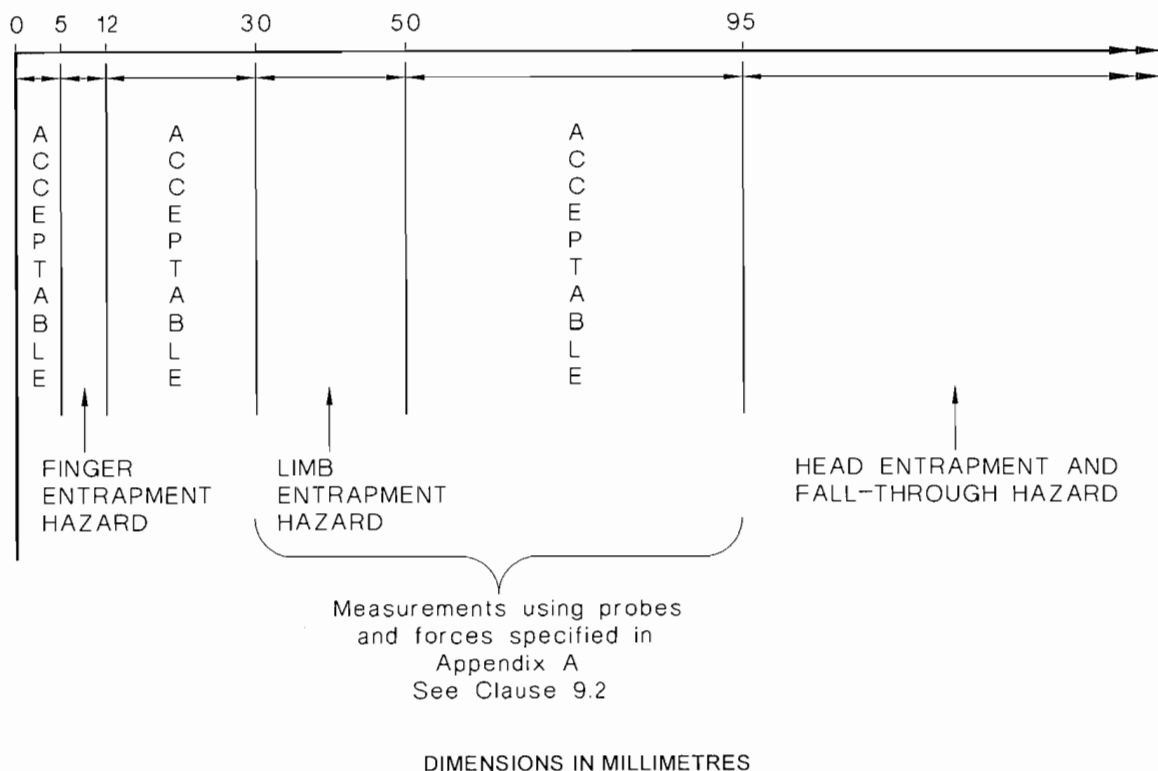


FIGURE 5 LINEAR REPRESENTATION OF HAZARDOUS OPENINGS

9.3 Impact test

When tested in accordance with Appendix B, the cot shall not fail or become permanently deformed nor shall any screw, fastening device, or joint between sub-assemblies become loose and the access shall remain closed throughout the test.

9.4 Strength test

When tested in accordance with Appendix C, no filler bar, filler panel or corner post shall break, permanently deform or suffer joint failure. No part shall become detached and the dropside shall not inadvertently open.

9.5 Dropside load test

When tested in accordance with Appendix D, there shall be no breaks or fractures of the bottom rail, nor failure of joints or access fastening devices on a cot.

9.6 Durability of the access fastening devices

When tested in accordance with Appendix E, the access fastening device shall not fail to hold the access in a fully closed position.

9.7 Durability of the dropside mechanism

When tested in accordance with Appendix F, there shall be no damage to the dropside, the dropside mechanism shall not be significantly deformed or damaged and all gaps accessible from within the cot shall comply with the requirements of Clause 9.2.

9.8 Stability test

When tested in accordance with Appendix G, no legs of the cot shall lift off the floor.

10 PLASTIC PACKAGING

Flexible plastic packaging or wrapping which is a bag, capable of being formed into a bag or capable of forming an opening with a circumference of 350 mm or more and a depth of 130 mm or more shall be either—

- (a) perforated with round holes of at least 5 mm in diameter (or other shaped holes of equivalent area) so that when the whole of a square template (measuring 150 mm along each side) is placed anywhere on the packaging the template will completely cover at least one of the perforation holes; or
- (b) made from a plastic material that has a thickness of 38 µm or more and carry a cautionary label similar to the following:

WARNING: TO AVOID DANGER OF SUFFOCATION TO BABIES AND CHILDREN DISPOSE OF THIS IMMEDIATELY.

NOTE: The dimensions of 350 mm and 130 mm are measured after the packaging has been stretched to its fullest extent.

11 INFORMATIVE LABELLING

11.1 Information on leaflet

Each cot shall include the following information on a leaflet in the cot package:

- (a) Clear and complete instructions for assembly of the cot.
- (b) Clear and complete instructions for maintenance of the cot.

- (c) 'RECOMMENDED MATTRESS SIZE This cot has been manufactured for use with a mattress which measures XX mm wide by YY mm long and ZZ mm in thickness. The width and length are specified because it is important that the gaps between the mattress and the sides and ends of the cot will not exceed 40 mm. This is to minimize the risk of a child's limb becoming caught in the gap. The thickness of the mattress has been specified to ensure that the depth of the cot is greater than 500 mm with the mattress base in the lower position to minimize the risk of a child climbing or falling out of the cot.'
- (d) For adjustable base cots a warning notice as follows:
WARNING: TO PREVENT FALLS, THE MATTRESS BASE OF THIS COT SHOULD BE ADJUSTED TO THE LOWEST POSITION BEFORE THE CHILD CAN SIT UP.
- (e) The manufacturer's, importer's or distributor's name and contact address.
- (f) A statement drawing attention to—
 - (i) the need to follow the manufacturer's assembly instructions in detail to ensure the safety features of the cot are not compromised;
 - (ii) the need to ensure the cot is placed at a reasonable distance from curtains, blinds, heaters and power points; and
 - (iii) the need to keep medication, string, elastic, small toys or small items, such as money, out of reach from any position in the cot.

11.2 Information on swing tag or label

Each cot should include the following information on a swing tag or label attached to the cot:

- (a) 'RECOMMENDED MATTRESS SIZE:
XX mm wide × YY mm long × ZZ mm thick'
- (b) The manufacturer's name and contact address.

11.3 Information on external packaging

Each cot should include the following information on the external surface of the packaging:

WARNING: TO PREVENT SUFFOCATION AND FALLS, THE RECOMMENDED MATTRESS SIZE SHOULD BE XX mm WIDE × YY mm LONG AND NO MORE THAN ZZ mm THICK.

NOTES: It is the intention of this Clause to ensure that—

- 1 a minimum distance of 500 mm is maintained between the top surface of the mattress and the top of the lowest side or end with the access closed and the base in its lower position; and
- 2 a minimum distance of 300 mm is maintained between the top surface of the mattress and the top of the lowest side or end with the access closed and the base in its upper position.

12 MARKING

12.1 Marking requirements

All parts of the marking in this Clause (12.1) shall be able to pass the tests specified in Clauses 12.2 and 12.3. All cots shall be prominently marked on the top surface of the mattress base, or on both surfaces if the base is reversible, as follows:

- (a) For cots of Australian or New Zealand manufacture—the manufacturer's, importer's or distributor's name and contact address.
- (b) For cots not manufactured in Australia or New Zealand—
 - (i) the country of origin; and

- (ii) the importer's name and contact address.
- (c) 'RECOMMENDED MATTRESS SIZE:
XX mm wide × YY mm long × ZZ mm thick'
- (d) A warning notice as follows:
WARNING: TO PREVENT FALLS, THE MAXIMUM MATTRESS THICKNESS SHOULD NOT EXCEED ZZ mm.
NOTES:
1 It is the intention of this Clause to ensure that—
 - (a) a minimum distance of 500 mm is maintained between the top surface of the mattress and the top of the lowest side or end with the access closed and the base in its lower position; and
 - (b) a minimum distance of 300 mm is maintained between the top surface of the mattress and the top of the lowest side or end with the access closed and the base in its upper position.
- 2 To facilitate any necessary recall action, it is suggested that a manufacturing batch number or other identification be marked on the cot.
- (e) For adjustable base cots, a warning notice as follows:
WARNING: TO PREVENT FALLS, THE MATTRESS BASE OF THIS COT SHOULD BE ADJUSTED TO THE LOWEST POSITION BEFORE THE CHILD CAN SIT UP.
- (f) The month and year of manufacture.

NOTE: Manufacturers making a statement of compliance with this Joint Australian/New Zealand Standard on a product, packaging, or promotional material related to that product are advised to ensure that such compliance is capable of being verified.

12.2 Marking legibility

Wording shall be clearly legible in monoline, geometric, lineale typeface of medium width characters not less than 2.5 mm high (see Note). Warnings shall be in bold, uppercase, typeface and not less than 5 mm high.

NOTE: Typeface descriptions of 'monoline', 'geometric', 'lineale' and 'medium width' are defined as follows:

- (a) Monoline—any typeface in which all strokes of the letters are apparently of equal thickness.
- (b) Geometric—lineale typefaces constructed on simple geometric shapes, circle or rectangle.
- (c) Lineale—typefaces without serifs (formerly called 'sans serif').
- (d) Medium width—the width which the manufacturer (of the type) puts forward under the name of the family (i.e. the group of typefaces which are derived from one basic design) as representing the design in that normal width from which variants in the family have been or may be derived.

12.3 Marking durability

Labels shall show no detachment from the cot, and the wording on labels either fixed to the product or on marking shall be easily legible when rubbed by hand for 15 s with a piece of cloth soaked in water, allowed to dry and rubbed for 15 s with a piece of cloth soaked with undiluted liquid domestic dishwashing detergent.

APPENDIX A
LIMB AND HEAD ENTRAPMENT HAZARD TEST
(Normative)

A1 SCOPE

This Appendix sets out a method for testing a cot for limb and head entrapment hazards posed by gaps within the cot.

NOTE: Clause 9.2 specifies the compliance requirements.

A2 PRINCIPLE

A series of probes are introduced into gaps within a cot and a force is applied to the probes to ascertain whether the gaps pose entrapment hazards.

NOTES:

- 1 The test in this Appendix is intended to reduce the possibility of injury to the child by ensuring that there are no gaps within the cot where any part of a child's body may become entrapped.
- 2 A 95 mm diameter probe is used to find openings larger than 95 mm, which are considered dangerous from the point of view of head entrapment. Openings between 50 mm and 95 mm are considered relatively safe. It is the intention of these requirements to prevent a child's head becoming entrapped in a gap or the child's body slipping through a gap and being caught by the neck.

A 30 mm diameter probe is used to find gaps large enough to trap a baby's arm or leg. Gaps smaller than 30 mm are considered relatively safe. However, gaps larger than 30 mm but less than 50 mm are considered dangerous as far as arm and leg entrapments are concerned. In this regard, a 50 mm diameter probe is used in conjunction with the 30 mm diameter probe to find openings between 30 mm and 50 mm.

12 mm and 5 mm probes are used to find gaps that may trap fingers. Gaps between 5 mm and 12 mm that are shallower than 10 mm are considered relatively safe. However, if they are 10 mm or deeper and do not allow free lateral movement of the 5 mm probe to at least 20 mm, they can pose a finger entrapment hazard.

To simulate the weight or strength of a child, a force of 100 N is applied to the probes to ascertain whether the gap being tested will open sufficiently to allow the probe to pass through.

The sizes of the above probes are based on anthropometric data as well as the findings of enquiries into fatal cot accidents.

- 3 Figure 5 illustrates a linear representation of gap sizes that pose entrapment hazards.

A3 APPARATUS

The following apparatus is required:

- (a) Three spherical probes made of suitable rigid material having the following diameters:
 - (i) 95 ± 0.5 mm.
 - (ii) 50 ± 0.5 mm.
 - (iii) 30 ± 0.5 mm.

Each probe may be mounted on a rod of diameter not greater than 15 mm for the purpose of applying the specified force.

- (b) Two cylindrical test probes made of suitable rigid material with chamfered end, approximately 100 mm long and having the following diameters:
 - (i) 12 ± 0.1 mm.
 - (ii) 5 ± 0.1 mm.
- (c) A means of applying and measuring a force of up to 100 ± 2.5 N.

A4 TEST CONDITIONS

Immediately before testing, the cot shall stand for at least 24 h in a standardized atmosphere at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

A5 PROCEDURE

The procedure shall be as follows:

- (a) Where applicable, assemble the cot in accordance with the manufacturer's instructions. Do not put a mattress in the cot.
- (b) Identify all gaps which are accessible within the cot.
- (c) To each of the identified gaps, insert the 95 mm diameter probe and apply a force of 100 N in an effort to force the probe through.
- (d) Record all the gaps that allowed the passage of the 95 mm diameter probe.
- (e) Record also all the gaps that did not allow the passage of the 95 mm diameter probe.
- (f) To each of the gaps noted in Step (e), insert the 50 mm diameter probe and apply a force of 100 N in an effort to force the probe through.
- (g) Record all the gaps that did not allow the passage of the 50 mm diameter probe.
- A1 | (h) To each of the gaps recorded in Step (g) insert the 30 mm diameter probe and apply a force of 100 N in an effort to force the probe through.
- A1 | (i) Record all gaps that allowed the passage of the 30 mm diameter probe except for the following:
 - (i) Gaps formed between—
 - (A) the fixed side and the mattress base in the upper position; and
 - (B) the fixed end and the mattress base in the upper position.
 - (ii) Gaps formed between the dropside in both open and closed positions and the mattress base in the upper position.
 - (iii) Gaps formed between the dropside in the open position and the mattress base in the lower position.
 - (iv) Gaps specified in Clause 6.1(g).
- (j) Record all the gaps that did not allow the passage of the 30 mm diameter probe.
- (k) To each of the gaps noted in Step (j), insert the 12 mm diameter probe and apply a force of 10 N in an effort to force the probe through.
- (l) Record all the gaps that did not allow the passage of 12 mm diameter probe.
- A2 | (m) To each of the gaps noted in Step (l), insert the 5 mm diameter probe and apply a force of 10 N in an effort to force the probe through.
- (n) Record all gaps that allowed the 5 mm diameter probe to penetrate to a depth of at least 10 mm, and did not allow the probe to have free lateral movement of at least 20 mm.

- (o) If possible, assemble the cot in another arrangement, e.g. with the dropside or mattress base inverted and repeat Steps (b) to (n).

NOTE: To ensure that the cot will perform satisfactorily under possible misuse, the cot is to be tested in all likely modes of assembly irrespective of whether the manufacturer intended the cot to be assembled in that mode, or whether the manufacturer provided a warning against incorrect assembly.

- (p) Repeat Step (o) for all likely assembly arrangements.

A6 REPORT

The following information shall be reported and, if appropriate, noted on a diagram of the cot:

- (a) The gaps that were found to have failed the test by allowing the passage of the 95 mm diameter probe as noted in Paragraph A5(d).
- (b) The gaps that were found to have failed the test by allowing the passage of the 30 mm diameter probe but not the 50 mm diameter probe as noted in Paragraphs A5(i) and A5(g) respectively.
- (c) The gaps that were found to have failed the test by allowing the passage of the 5 mm diameter probe to a depth of at least 10 mm, and did not allow the probe to have free lateral movement of at least 20 mm as noted in Paragraph A5(n).
- (d) Reference to this test method, i.e. AS/NZS 2172, Appendix A.

APPENDIX B

IMPACT TEST

(Normative)

B1 SCOPE

This Appendix sets out a method for testing the ability of a cot (particularly the mattress base) to withstand repeated impacts, and the ability of the access to remain closed throughout the test.

NOTE: Clause 9.3 specifies the compliance requirements.

B2 APPARATUS

The following apparatus is required:

- (a) A 100 mm thick polyurethane mattress that complies with AS 2281 Type N classification having a minimum density of 20 and a nominal hardness of 100.
- (b) A test weight having a circular contact face of 300 ± 5 mm diameter and a mass of 30 ± 0.5 kg.

NOTE: It is recommended that an automatic mechanical device be used to lift and drop the weight.

B3 TEST CONDITIONS

Immediately before testing, the cot shall stand for at least 24 h in a standardized atmosphere at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

B4 PROCEDURE

The procedure shall be as follows:

- (a) Where applicable, assemble the cot in accordance with the manufacturer's instructions.
- (b) Place the mattress in the cot.
- (c) Close the access and, if applicable, lock the access fastening device.
- (d) Position the appropriate test weight so that—
 - (i) its contact face is 150 ± 10 mm above the top of the mattress; and
 - (ii) the centre of gravity of the test weight is located vertically above a point within 10 mm of the centre of the top surface of the mattress base.
- (e) Release the appropriate test mass so that it falls freely on the mattress.
- (f) Repeat the test until—
 - (i) any component of the cot fails or permanently deforms or any fastening device or joint loosens or the access opens during the test; or
 - (ii) 200 drops have been completed.
- (g) Inspect the cot for failure, permanent deformation, loosening of any fastening devices (e.g. screws) or joints and note whether the access remained closed throughout the test.
- (h) If possible, assemble the cot in another arrangement, e.g. with the dropside or mattress base inverted, and repeat Steps (b) to (g).

- (i) Repeat Step (h) for all possible assembly arrangements.

NOTE: The cot is tested in all likely modes of assembly to ensure that the cot will perform satisfactorily under possible misuse, irrespective of whether the manufacturer intended the cot to be assembled in that mode or provided a warning against incorrect assembly.

B5 REPORT

The following information shall be reported and, if appropriate, recorded on a diagram of the cot:

- (a) The number of times the weight was dropped before any component of the cot failed or permanently deformed or any fastening device or joint loosened or the access opened during the test, up to and including 200 drops.
- (b) Whether any component of the cot broke or became permanently deformed.
- (c) Whether any fastening device became loose.
- (d) Whether any joint became loose.
- (e) Whether the access remained closed throughout the test.
- (f) Reference to this test method, i.e. AS/NZS 2172, Appendix B.

APPENDIX C

STRENGTH TEST

(Normative)

C1 SCOPE

This Appendix sets out a method for testing the strength of the filler bars, filler panels, and corner post joints of a cot.

NOTE: Clause 9.4 specifies the compliance requirements.

C2 APPARATUS

The following apparatus is required:

- (a) A means of applying and measuring a force of up to 125 ± 5 N.
- (b) A loading pad capable of transmitting a force of 125 ± 5 N over a contact area of 10 cm^2 .
- (c) A timing device.
- (d) A means of securing the cot to the floor.

C3 TEST CONDITIONS

Immediately before testing, the cot shall stand for at least 24 h in a standardized atmosphere at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

C4 PROCEDURE

The procedure shall be as follows:

- (a) Where applicable, assemble the cot in accordance with the manufacturer's instructions.
- (b) Securely clamp the cot to the floor.
- (c) Close the access and, if applicable, lock the access fastening device.
- (d) Using the loading pad (C2(b)) apply a force of 125 ± 5 N, for a period of 10 s, to each filler bar or filler panel on the ends and sides of the cot, in an outward direction, at the centre of the bar or panel.
- (e) Test each corner post of the cot as described in Step (d).
- (f) Inspect the cot for breakage, permanent deformation, inadvertent opening of the dropside or joint failure.

C5 REPORT

The following information shall be reported and, if appropriate, recorded on a diagram of the cot:

- (a) If, which and where any filler bar, filler panel or corner post broke or, permanently deformed, if the dropside inadvertently opened or the cot suffered joint failure.
- (b) Reference to this test method, i.e. AS/NZS 2172, Appendix C.

APPENDIX D
DROPSIDE LOAD TEST
(Normative)

D1 SCOPE

This Appendix sets out a method for testing—

- (a) the strength of the bottom rail of a dropside;
- (b) the integrity of the joints between the filler bars/filler panels and the top and bottom rail of the dropside; and
- (c) the strength of the access fastening device.

NOTE: Clause 9.5 specifies the compliance requirements.

D2 APPARATUS

The following apparatus is required:

- (a) A weight having a mass of 50 ± 1.0 kg.
- (b) A means of attaching the above weight to the bottom rail of a dropside.
- (c) A timing device.

D3 TEST CONDITIONS

Immediately before testing, the cot shall stand for at least 24 h in a standardized atmosphere at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

D4 PROCEDURE

The procedure shall be as follows:

- (a) Where applicable, assemble the cot in accordance with the manufacturer's instructions.
- (b) Close the access and, if applicable, lock the access fastening device.
- (c) Suspend the weight specified in Paragraph D2(a) from a position on the bottom rail of the cot dropside, where it would be most likely to cause damage to the dropside and access fastening device.

Apply the mass over an 80 mm distance between the filler bars or filler panels or the full distance between the filler bars or filler panels, if the distance between them is less than 80 mm. Gradually apply the mass over a 5 s period and allow it to remain for a further 15 min.

- (d) Inspect the cot for breakage, fractures, joint failures or access fastening device failure.

D5 REPORT

The following information shall be reported on a diagram of the cot:

- (a) Where the weight was applied.
- (b) If and where the bottom rail broke or fractured.

- (c) If and where the joints between the filler bars and panels, and the top or bottom rails failed.
- (d) If and which access fastening devices failed.
- (e) Reference to this test method, i.e. AS/NZS 2172, Appendix D.

APPENDIX E
DURABILITY OF ACCESS FASTENING DEVICES
(Normative)

E1 SCOPE

This Appendix sets out a method for testing the durability of the access fastening device of a cot.

NOTE: Clause 9.6 specifies the compliance requirements.

E2 APPARATUS

No apparatus is required for this test.

E3 TEST CONDITIONS

Immediately before testing, the cot shall stand for at least 24 h in a standardized atmosphere at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

E4 PROCEDURE

The procedure shall be as follows:

- (a) Where applicable, assemble the cot in accordance with the manufacturer's instructions.
- (b) Close the access and lock the access fastening device.
- (c) Open the access fastening device in the manner required in normal operation, and allow the access to open to its fullest extent under the effect of gravity only.
- (d) Repeat Steps (b) and (c) until—
 - (i) the fastening device has been operated 200 times; or
 - (ii) the fastening device fails to hold the access in a fully closed position.
- (e) Inspect the access fastening device for any wear, loosening or deformation which might give an indication of failure in the short term.

E5 REPORT

Report the following:

- (a) Whether the fastening device failed to hold the access in a fully closed position.
- (b) The number of times the access fastening device was operated before either failure occurred, or the test was completed and if there was any indication of future failure in the short term.
- (c) Reference to this test method, i.e. AS/NZS 2172, Appendix E.

APPENDIX F
DURABILITY OF THE DROPSIDE MECHANISM
(Normative)

F1 SCOPE

This Appendix sets out a method for testing the durability of dropside mechanism.

NOTE: Clause 9.7 specifies the compliance requirements.

F2 APPARATUS

Means to remove or adjust components on the cot which may impede the dropside from freely falling from its uppermost position to its lowermost position.

F3 TEST CONDITIONS

Immediately before testing, the cot shall stand for at least 24 h in a standardized atmosphere at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

F4 PROCEDURE

The procedure shall be as follows:

- (a) Where applicable, assemble the cot in accordance with the manufacturer's instructions.
- (b) Remove any device which has to be fitted during the assembly and which limits the force of fall for the dropside, such as dampers or bump stops. Adjust all components which have to be or can be adjusted during assembly, so as to provide for the freest fall of the dropside. Secure the access fastening device so that it does not prevent the dropside from falling.
- (c) Raise the dropside to its uppermost height.
- (d) Release the dropside to drop freely from its uppermost to its lowermost height.
- (e) Repeat Steps (c) and (d) for a total of 200 drops.
- (f) Visually inspect the dropside mechanism for any deformation or damage due to the impacts.

F5 REPORT

The following information shall be reported and, if appropriate, recorded on a diagram of the cot:

- (a) Whether the dropside was damaged.
- (b) Whether the dropside mechanism deformed or was damaged.
- (c) Reference to this test method, i.e. AS/NZS 2172, Appendix F.

APPENDIX G
STABILITY TEST
(Normative)

G1 SCOPE

This Appendix sets out a method for testing the stability of the cot when subjected to a horizontal force.

NOTE: Clause 9.8 specifies the compliance requirements.

G2 APPARATUS

The following apparatus is required:

- (a) Stops which will prevent the cot from moving along the floor when the tip-over force is applied but which will not inhibit the cot from tipping. The stops shall be no higher than 12 mm, except in cases where the design of the cot necessitates the use of higher stops, in which case the stops shall be as low as will prevent the cot from moving.
- (b) Test mattress specified in Paragraph B2(a), Appendix B.
- (c) A means of applying and measuring a force of up to 30 ± 0.5 N.
- (d) A test weight of mass 10 ± 0.2 kg and measuring 100 mm in width and 30 mm in depth.

G3 TEST CONDITIONS

Immediately before testing, the cot shall stand for at least 24 h in a standardized atmosphere at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

G4 PROCEDURE

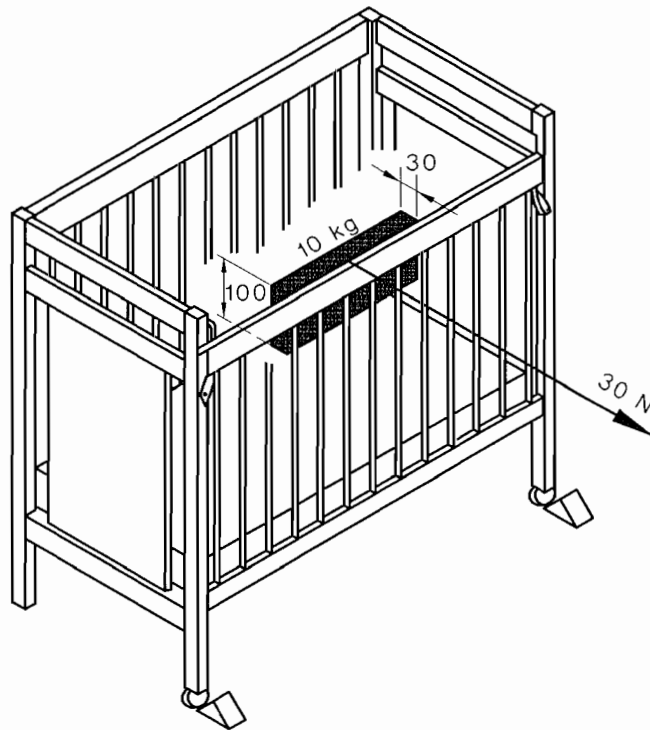
The procedure shall be as follows:

- (a) Where applicable, assemble the cot with the mattress base in the upper position in accordance with the manufacturer's instructions.
- (b) Position the cot on a horizontal floor with the legs secured against the stops described in Paragraph G2(a).
- (c) Place the mattress in the cot.
- (d) Apply the 10 kg weight at the centre of the upper edge of the dropside or the opposite side (see Figure G1).
- (e) In the case of a cot with castors, place the castors in the most unfavourable position (see Figure G1).
- (f) Apply a horizontal force of 30 ± 0.5 N to the centre point of the uppermost horizontal rail of the side or dropside which would most likely cause the cot to tip over (see Figure G1).
- (g) Observe if any of the legs of the cot lift off the floor.

G5 REPORT

The report shall state:

- (a) Whether any of the legs of the cot lifted off the floor during the test.
- (b) Reference to this test method, i.e. AS/NZS 2172, Appendix G.



DIMENSIONS IN MILLIMETRES

FIGURE G1 TIPPING ARRANGEMENT

AMENDMENT CONTROL SHEET**AS/NZS 2172:2003**

Amendment No. 1 (2006)

REVISED TEXT

SUMMARY: This Amendment applies to the Clause 6.1, 6.3, 6.7, and Appendix A.

Published on 9 January 2006.

Amendment No. 2 (2008)

CORRECTION

SUMMARY: This Amendment applies to Appendix A.

Published on 14 November 2008.

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